The Building Test Centre
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Report Number **BTC 11272A**

A LABORATORY SOUND INSULATION TEST TO BS EN ISO 140 - 3: 1995 ON A GYPROC PARTITION COMPRISING 92S55 STUD, 3 x 25mm ISOWOOL 1200 IN CAVITY AND A SINGLE LAYER 12.5mm GYPROC SOUNdBLOC EACH SIDE.

Test Date: 31st October 2000

Customer: British Gypsum Limited
Head Office
East Leake
Loughborough
Leicestershire
LE12 6HX

UKAS TESTING
No. 0296
No. 0296SI

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FOREWORD

This test report details a sound insulation test conducted on a Gyproc sheet and stud partition comprising 92S55 stud, 3 x 25mm Isowool 1200 in the cavity and clad with a single layer of 12.5mm Gyproc SoundBloc board each side.

The test specimen was installed by British Gypsum Limited. The construction of the specimen took place on the 30th and 31st October 2000. The Building Test Centre played no role in the design or selection of the materials comprising the test specimen.

REPORT AUTHORISATION

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TEST CONSTRUCTION

Gyproc 94C50 channel was screw fixed to the head and base of the test aperture at 600mm centres. Gyproc 92S55 studs were installed in the channels at 600mm centres and 3 x 25mm Isowool 1200 was located in the cavity. A single layer of 12.5mm Gyproc SoundBloc was screw fixed around the perimeter and to intermediate studs of each side using 25mm Gyproc Drywall S point screws. All joints were staggered and taped. The perimeter was sealed with Gyproc sealant.

The descriptions of individual components making up the test specimen were provided by the customer and were checked for accuracy wherever possible.

TEST MATERIALS

Gyproc SoundBloc Board

Nominally 1200mm (wide) x 1400mm (long) x 12.5mm (thick) Gyproc SoundBloc board manufactured by British Gypsum Limited, ex Kirkby Thore works.

Actual surface density:	10.42 kg/m^2.
Nominal moisture content:	<1%.
Board identification:	27-175-0, 19:43:21.

The surface density was calculated using the actual weight and size of boards used in the test specimen. The moisture content of plasterboard has been established from measurements made over many tests using samples dried to constant weight in an oven at 40^{0}C.

Fasteners

i) 25mm Gyproc Drywall S point screws

All fasteners supplied by British Gypsum Limited.

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Insulation

Isowool 1200 nominally 25mm thick supplied by British Gypsum - Isover Limited.

Actual density: 17.93 kg/m^3.

Where measurements could not be taken then weight and dimensions were provided by the customer or the manufacturer e.g. from material labelling. Material information was recorded according to procedure MAT/1.

TEST PROCEDURE

The test specimen (3.16m x 3.16m) is constructed in a floor dividing two reverberant rooms of approximately 98m^3 and 101m^3. The accuracy of the test method conforms to BS EN 20140-2: 1993, the test procedures used were 140/3 issue 3 (airborne) and 140/6 issue 2 (impact). Broad-band white noise was used to measure the level differences and broad-band pink noise was used to measure the reverberation times. Third octave band pass filters were used in real time mode. See appendix for further information.

TEST RESULTS

Weighted Airborne Sound Reduction Index R_w (C; Ctr) = 50 (-2; -6) dB

For full data see pages 7 - 8

Tested in accordance with BS EN ISO 140-3: 1995.

Airborne sound insulation test rated in accordance with BS EN ISO 717-1:1997

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LIMITATIONS

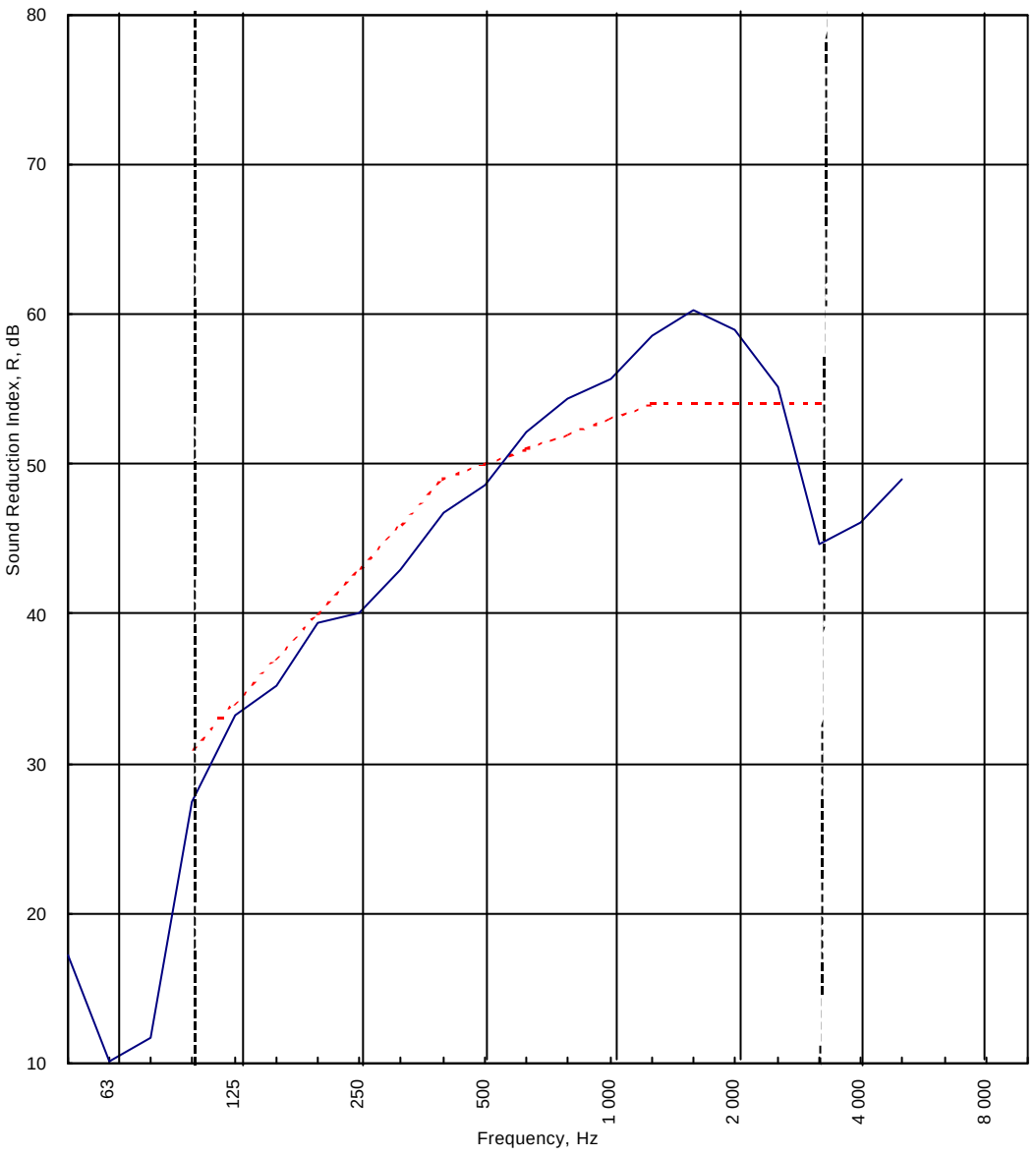
The results only relate to the behaviour of the element of construction under the particular conditions of test; they are not intended to be the sole criteria for assessing the potential acoustic performance of the element in use nor do they reflect the actual behaviour.

The specification and interpretation of test methods are the subject of ongoing development and refinement. Changes in associated legislation may also occur. For these reasons it is recommended that the relevance of test reports over 5 years old should be considered by the user. The laboratory that issued the report will be able to offer, on behalf of the legal owner, a review of the procedures adopted for a particular test to ensure that they are consistent with current practices, and if required may endorse the test report.

APPENDIX A – TEST DATA

Test Code:
H11272A
Test Date:
31/10/00

Freq. Hz	R dB
50	17.2
63	10.1
80	11.7
100	27.5
125	33.3
160	35.2
200	39.4
250	40.1
315	42.9
400	46.7
500	48.6
630	52.2
800	54.4
1 000	55.7
1 250	58.6
1 600	60.3
2 000	58.9
2 500	55.2
3 150	44.6
4 000	46.1
5 000	49.0
6 300	
8 000	
10 000	



Rating according to
BS EN ISO 717-1:1997

Rw (C;Ctr) = 50 (-2;-6) dB

Max dev. 9.4 dB at 3 150 Hz

Evaluation based on laboratory measurement results obtained by an engineering method:

$C_{50\text{-}3150}$= **-9 dB** $C_{50\text{-}5000}$= **-8 dB** $C_{100\text{-}5000}$= **-2 dB**

$C_{tr,50\text{-}3150}$= **-21 dB** $C_{tr,50\text{-}5000}$= **-21 dB** $C_{tr,100\text{-}5000}$= **-6 dB**

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LABORATORY AIRBORNE SOUND INSULATION TEST - BS EN ISO 140-3:1995

Test Code: **H11272A**

Test Date: **31/10/00**

Specimen Area, S = **8.64** m^2

	Room T2	Room T1
Room Volume, m^3:	**98**	**62**
Temperature, deg.C:	**13.5**	**13.2**
Rel. Humidity, %RH:	**62.4**	**61.8**

	Test Room T2 to Test Room T1								
Freq	Source	Rec. (uc)	Bgrnd	Rec. (corr)	Rev.time	Corr.	**R**	U.Dev.	R 1/1Oct
Hz	dB	dB	dB	dB	Sec	dB	**dB**	dB	dB
50	59.1	38.4	15.8	38.4	0.51	-3.5	**17.2**		
63	60.8	48.2	14.7	48.2	0.65	-2.5	**10.1**		12.1
80	63.2	49.3	5.3	49.3	0.69	-2.2	**11.7**		
100	75.1	46.6	21.6	46.6	0.92	-1.0	**27.5**	3.5	
125	80.3	46.9	7.5	46.9	1.13	-0.1	**33.3**	0.7	30.7
160	86.7	50.9	11.2	50.9	1.00	-0.6	**35.2**	1.8	
200	92.5	54.0	22.4	54.0	1.41	0.9	**39.4**	0.6	
250	95.1	56.4	21.0	56.4	1.58	1.4	**40.1**	2.9	40.6
315	95.2	52.5	15.5	52.5	1.19	0.2	**42.9**	3.1	
400	93.7	47.2	14.9	47.2	1.19	0.2	**46.7**	2.3	
500	91.6	43.3	14.2	43.3	1.23	0.3	**48.6**	1.4	48.6
630	90.4	39.1	10.2	39.1	1.42	0.9	**52.2**		
800	90.8	37.9	12.5	37.9	1.64	1.5	**54.4**		
1 000	90.3	36.3	10.0	36.3	1.70	1.7	**55.7**		55.9
1 250	91.7	35.2	8.0	35.2	1.87	2.1	**58.6**		
1 600	94.1	35.8	7.9	35.8	1.82	2.0	**60.3**		
2 000	95.6	38.7	7.0	38.7	1.81	2.0	**58.9**		57.6
2 500	94.0	40.4	6.7	40.4	1.65	1.6	**55.2**		
3 150	93.0	49.3	8.2	49.3	1.41	0.9	**44.6**	9.4	
4 000	92.2	46.9	9.8	46.9	1.39	0.8	**46.1**		46.2
5 000	90.6	42.1	11.9	42.1	1.29	0.5	**49.0**		
6 300									
8 000									
10 000									

Total U. Dev., dB **25.7**

Single Figure Ratings	**Rw**	**C**	**Ctr**
BS EN ISO 717-1: 1997	**dB**	**dB**	**dB**
	50	**-2**	**-6**
	(100-5000)	**-2**	**-6**
	(50-3150)	**-9**	**-21**
	(50-5000)	**-8**	**-21**

Test Procedure: 140/3/issue 3

Worksheet: MSOFFICE\EXCEL\140\140_3_1.XLS

Customer: **British Gypsum Limited**

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APPENDIX B – LABORATORY DETAILS

The source room (T2) was treated with six perspex diffusers of approximately 900mm x 1220mm. An omni-directional loudspeaker sound source is placed near a back corner of the source room (T2), rotating at 1 rpm and at least 0.7m from any room boundary to satisfy Annex C of BS EN ISO 140-3: 1995. A stationary loudspeaker sound source is placed in the corner of the receiving room (T1) opposite the test specimen.

The average sound pressure level in each 1/3 octave band is measured using a rotating microphone boom, positioned such that the minimum distance between microphone and sound source is 1m and between microphone and room boundaries is 0.7m.The rotating microphone has a sweep radius of at least 1m and is inclined in relation to the boundaries at an angle of at least 30^{o} to the horizontal. The microphone has a traverse time of 32 seconds, and the sound pressure levels are averaged over 64 seconds which is equivalent to two complete sweeps of the microphone boom.

The equivalent absorption area of the receiving room is determined by producing the arithmetic average of six reverberation times and applying this to the Sabine formula.

The test specimen is installed in the aperture so that it finishes flush with the last timber in room T2 side to eliminate indirect transmission between rooms. The specimen is not installed so that the aperture depth ratio 2:1 is met as recommended in section 5.2.1 of BS EN ISO 140-3:1995. Laboratory tests have shown to prove the insignificance of this installation position on the test results.

The laboratory limit for measurement due to flanking is (BTC H 3306A)

Freq Hz	50	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000
R'max	32	44	39	55	56	59	64	63	70	77	84	88	91	92	94	97	96	98	96	90	87

The figure below show flanking and isolation treatments in the test chamber.

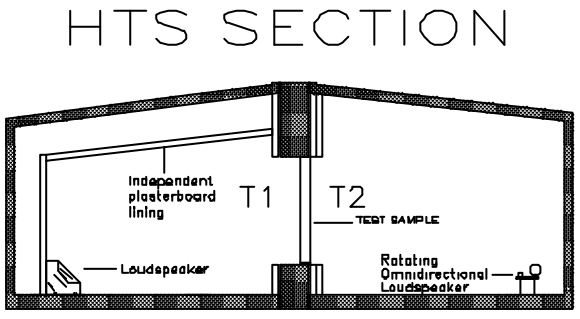

Figure 1 **Chamber layout**